Addis Ababa University

College of Business and Economics

Department of Management

(Graduate Program)

Barriers and Benefits of Electronic Banking System in Ethiopia

A Thesis Submitted to the School of Graduate studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master in Executive Business Administration.

Advisor : Dr. Salehu Anteneh

By Rahel Mulugeta

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Addis Ababa

Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for degree in any other university and that all sources of materials used for the thesis have been duly acknowledged.

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By

Rahel Mulugeta

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Table of Contents

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List of Figures

List of Tables

Acronyms

ATM	Automated Teller Machine
CBE	Commercial Bank of Ethiopia
DIO	Diffusion of Innovation
E-Banking	Electronic Banking
E-Business	Electronic Business
E-Commerce	Electronic Commerce
EDI	Electronic Data Interchange
EFT	Electronic Fund Transfer
ERP	Enterprise Resource Planning
ICT	Information Communication Technology
IT	Information Technology
IVR	Interactive Voice Response
IOS	Inter Organizational Systems
NBE	National Bank of Ethiopia
PDA	Personal Digital Assistance
POS	Point of Sale
SMS	Short Message Service
SPSS	Statistical Package for Social Science
TAM	Technology Acceptance Model
TOE	Technology Organization Environment
TPB	Theory of Planned Behavior
UTAUT	Unified Theory of Acceptance and Use of Technology

Abstract

This thesis aims to examine implementation of E-banking in Ethiopian banking industry with respect to the barriers which can influence firms from taking advantage of E-banking system and expected benefits derived by adopting the system. The study was conducted based on the data gathered from seventeen banks in Ethiopia; sixteen private banks and one state owned bank. Descriptive research approach was used to answer the research questions that emerge through the review of existing literature and responses from participants through questionnaire. The study statistically analyzes data obtained from the survey questionnaire. A research framework is developed based on technology-organization-environment (TOE) framework to guide the study. The result of the study indicated that, the major barriers Ethiopian banking industry faces in the implementation of E-banking are technology infrastructure being not easily available and low level of telecommunication network, lack of participation of employees in the implementation process, lack of training, absence of management support, lack of government support and absence of legal framework. The study also revealed direct and indirect benefits from E-banking implementation which are low cost in performing transaction, high speed and efficiency in service delivery, increased productivity and profitability of banks and improvement in customer service. The study suggests a series of measures which could be taken by the banking industry and by government to address various challenges identified in the thesis. These measures include: government support in providing technology infrastructure for ICT development and setting the necessary legal framework, banks to modernize their service by mobilizing all their resources through participating their staffs and providing trainings, and banks to create awareness to customers on how to make use of E-banking products and the benefits that will come out of it.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The Ethiopian banking industry currently comprises nineteen commercial banks of which three are state owned while the rest are privately owned banks. The private banks joined the industry following the liberalization of the financial sector in 1992. Despite entry of new players into the industry, there had been little change over the decades in terms of service offerings and the channels deployed. While much of the world embraces on line banking system, Ethiopian banks had long been reliant on bricks and mortar/branches to reach out their customers. (Lee et al., 2008) noted that innovations in banking technologies date back to the 1960s and 1970s in the developed economies. By then much of the focus had been on moving away from manual and paper recording to electronic and paperless transactions.

Information technology is becoming an important factor in the future development of financial services industry, especially the banking industry. The banking sector is based on sharing information which itself heavily relies on information and communication technology (ICT) in order to acquire, analyze and deliver data to all relevant users. Hence ICT is crucial not only for information analysis, but also enables the banking sector to differentiate its offer from competitors and thereby make it a market leader. In this respect, the banking sector is obliged to continuously innovate and update its service dimension in order to closely meet the demands and requirements of the individual customer as well as to make the service efficient and profitable. Hence the development of the concept of electronic financial services more commonly known as "E-banking" is essential for the day-to-day transactions to meet the expectations of customers (flexibility of financial services without paying more and make transaction wherever, whenever and however the customer wants) and internal users (employees) through facilitated workflow.

As stated in different E-banking literature the deployment of E-banking helps financial service providers to achieve cost reduction, revenue enhancement, product diversification, increased competitiveness and better brand image. The benefits of E-banking are not confined to banks alone. As Lee (2008) noted, E-banking in its various forms, provides a convenient, low cost alternative to the traditional bank visit. Therefore, transition to E-banking is becoming necessary for banks to benefit from competitive advantage, to improve efficiency and operational effectiveness within the company and to develop a stronger and more durable business

relationship with customers.

In order to encourage further E-banking adoption in developing counties, a better understanding of the barriers and drivers impacting E-banking adoption is critical (Zhao et al. 2008). By gaining an in-depth understanding of the factors and conditions that influence the ability to fully adopt and realize its benefits, strategic implications can be generated for the researchers and practitioners regarding how to promote the growth of E-banking in the developing countries. However, despite the importance of these adoptions limited studies are currently available in developing countries, especially in Ethiopia. Therefore, more studies are still required to understand the relevance of E-banking in the country to identify areas in which the country lags behind that inhibit their E-banking adoption and diffusion. Therefore, to address the current gap in the literature, this study is designed to examine the E-banking adoption situation in Ethiopia focusing on the investigation of barriers and drivers of adopting E-banking system in order to recommend appropriate actions to be taken to promote E-banking system in the country.

1.2 Statement of the Problem

For a number of decades the Ethiopian economy has remained away from online banking system while many countries of the world including African countries have introduced the system to their economy many years back (Gardachew 2010). Though Ethiopian banks have started giving E-banking services, it is obvious that the country in general and the banks in particular have forgone the benefits that could have been enjoyed for not adopting the system fully.

As described by Ayana (2012), E-banking has a lot of benefit in delivering service to customers. However in Ethiopia customers missed the enjoyment of technological advancement in the banking sector which has been entertained elsewhere in Africa and the rest of the world. The modern E-banking methods like Automated teller machine (ATM), Debit cards, Credit cards, Tele banking, Internet banking, Mobile banking and others are new to the Ethiopian banking sector. E-banking, which refers to the use of modern technology that allows customers to access banking services electronically, whether it is to withdraw cash, transfer funds, or to pay bills, to obtain commercial information and advices are not well known in Ethiopia.

A research done by Ayana (2014) on factors affecting adoption of E-banking system in Ethiopian

banking industry, focused on factors that affect adoption of E-banking in Ethiopian banking industry. In his study he has seen legal framework, national ICT infrastructure, competitive pressure and government support from the environmental factor. Financial and human capital from organizational factor and relative advantage and disadvantage from technological factors. And he concluded that E-banking system is not well adopted in Ethiopian banking industry, due to low level of ICT infrastructure and lack of legal framework at NBE. In addition to this the result of the study also showed that security risk and lack of trust on the use of technological adoption are other major barriers for the system.

On the other hand a study conducted by Gardachew (2010) on practices, opportunity and challenges of E-banking, analyzed the main challenges and opportunities of E-banking. He came up with the challenges being low level of internet penetration and poorly developed telecommunication infrastructure, lack of suitable legal and regulatory framework for e-commerce and e-payment. In addition to these he also mentioned high rates of illiteracy high cost of internet and absence of financial networks that link different banks as challenges of E-banking.

A study undertaken by Senait (2007) on prospects and challenges of E-banking focused on prospects and challenges of E-banking in Ethiopia. In her study she mentioned determinant factors of E-banking in Ethiopia include technological and infrastructural requirement, customers' attitude, capacity of existing banks and capacity of regulatory and supervisory organs.

In this study we will see human capital and communication process which were not included in the previously done studies in Ethiopia but are the main factors in adoption of new technologies. Communication and participation of all employees from the start to the end of E-banking implementation will be considered. In addition to availability and characteristics of technology, perceived benefit and risk, competition and government regulation which affect technological adoption will also be taken into consideration.

1.3 Research Questions

Based on the problem stated in this study, the researcher develops the following questions;

a. What are the barriers to E-banking implementation in Ethiopia?
b. What are the benefits of implementing E-banking?

1.4 Objectives of the Study

1.4.1 General Objective

The banking industry is one of the service industries crucial for the growth of the overall economy. It plays a great role in capital mobilization and granting of financial facilities that is crucial to business development and growth. As business always need to find ways of improving its products and service deliveries, it will be useful to understand how different factors affect E-banking implementation and in which way the technological innovations benefit the banking industries. Therefore, the purpose of this study is to identify the positive factors (drivers) and negative factors (barriers) that affect implementation of E-banking in Ethiopia.

1.4.2 Specific Objectives

a. To describe the technological, organizational and environmental barriers or challenges the banking industry faces in implementing E-banking system.

b. To assess the benefits derived from implementation of E-banking and suggest some possible solution based on the study findings in order to extract as much benefit as possible from implementation of E-banking services.

1.5 Significance of the Study

By gaining an in-depth understanding of the factors and conditions that influence banks to fully adopt and realize benefits, strategic implication can be generated for researchers and practitioners regarding how to promote the growth of E-banking. In addition to this the study will help researchers in gaining insight about current status of E-banking systems in Ethiopia and points problem areas that need further investigation and possible solution. Recommendations from the study and findings will contribute to the volume of knowledge about E-Banking services situation in Ethiopia and will open a room for further research. The study will also help other companies engaged in the banking sector but who are not giving E-banking services to

recognize the importance of implementing E-banking.

1.6 Scope of the Study

In pursuance of the objective of the study; attention shall be focused on E-banking among other electronic commerce implementation. Empirical investigation into the implementation of E-banking will be conducted by examining E-banking operations in all the commercial banks in Ethiopia that implement E-banking.

1.7 Limitation

The major limitation faced in conducting the study is the difficulty faced while conducting the survey to reach E-banking unit which is confidential in many of the banks.

1.8 Organization of the Paper

The research paper is organized into five chapters. Chapter one contains the introduction part mainly dealing with background of the study, research problems and objectives of the study. The second chapter discusses review of related literatures about the subject matter. Chapter three focuses on methodology of the study. Chapter four discusses about the analysis of the study while the fifth chapter contains summary, conclusion and recommendation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Definition of E-Banking

Technological innovations play a crucial role in banking industry by creating value for banks and customers, that it enables customers to perform banking transactions without visiting a brick and mortar banking system. On the other hand E-banking has enabled banking institutions to compete more effectively in the global environment by extending their products and services beyond the restriction of time and space (Turban 2008).

There are several definitions given to E-banking by different scholars. Some of them are presented as follows:

E-banking is a form of banking service where funds are transferred through an exchange of electronic signal between financial institutions, rather than exchange of cash, cheques or other negotiable instruments (Kamrul 2009).

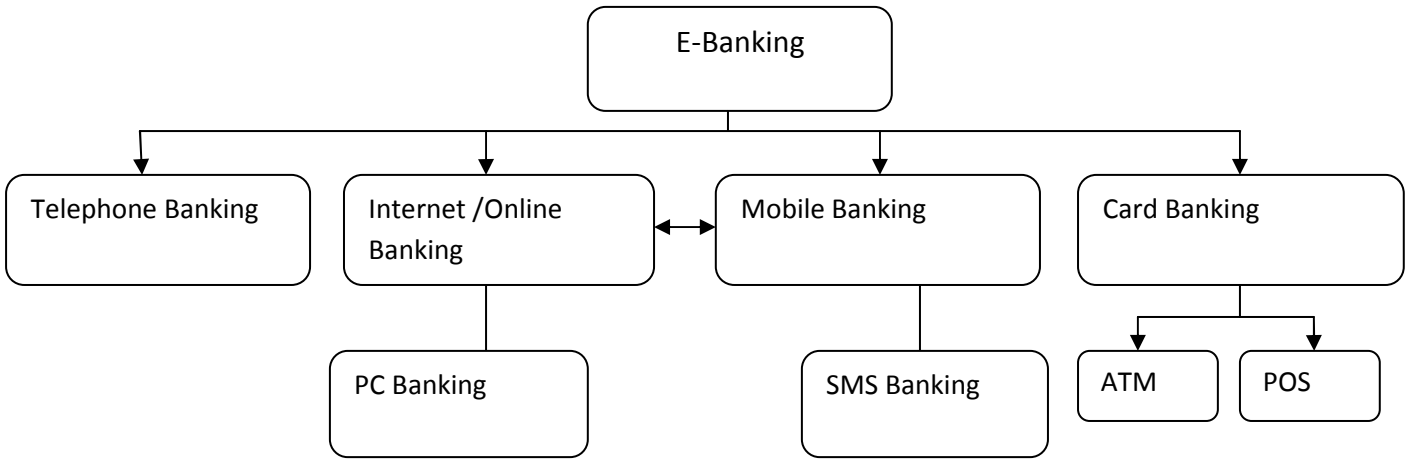
Malak (2007) defined E-banking, also known as electronic fund transfer (EFT), as the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash. While Alagheband (2006) described it as a variety of platforms such as internet banking (online banking), mobile phone banking and PC(personal computer) banking whereby customers access these services using an intelligent electronic device, like PC, personal digital assistant (PDA), automated teller machine (ATM), point of sale (POS), kiosk or touch tone telephone.

E-banking is also defined by Yang (1997) as the use of a computer to retrieve and process banking data (statements, transaction details, etc.) and to initiate transactions (payments, transfers, requests for services, etc.) directly with a bank or with other financial service provider remotely via a telecommunications network.

2.2 Forms of E-banking

Shakila and Faira (2012) stated in their study that E-banking can be broadly classified into four categories, which are telephone banking, internet banking, mobile banking and card banking. In order to have a clear view the different forms of E-banking are discussed as follows.

Figure 1 – Forms of E-Banking



Source: Shakila Z. and Faria K. (2012)

Telephone Banking is a service provided by financial institutions that enables customers of financial institution to perform financial transactions over the telephone, without the need to visit a bank branch using an interactive voice response (IVR).

Internet/Online Banking Allows customers to track their financial transaction and do fund transfer, initiate a local money transfer and process payments over the Internet.

Mobile banking is used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA) by using short text message (SMS).

PC Banking refers to use of personal computer for banking activities at home or any other places which are outside bank branches to access accounts for transactions by subscribing to and dialing into the banks' Internet proprietary software system using password. Basically, PC banking may be categorized into online banking or internet banking.

Card Banking allows customers to withdraw and/or send cash, inquire a balance, get mini statement and do fund transfer using their debit card over an ATM, and purchase an item using their debit cards over point-of-sale (POS) terminal 24 hours a day and 7 days a week. Ayana

(2012) stated in his study that an ATM is an electronic terminal which gives consumers the opportunity to get banking service at almost any time to withdraw cash, make deposits or transfer funds between accounts. While the point-of-sale terminal allows consumers to pay for retail purchase with a check card which the money is transferred immediately from the account of debit card holder to the store's account (Malak 2007)

2.3 Evolution of E-banking System

Electronic innovation in banking industry can be traced back to 1970, when the computerization of financial institutions gained momentum (Malak 2007**)**. Chai (2006) also mentioned the transformation from traditional, bricks and mortar, banking to E-banking has been momentous. Since the advent of Automatic Teller Machine (ATM) the retail banking industry witnessed such significant and extensive change. The ATM has delivered on the promise made in the 1970s, providing consumers with the convenience of 24 hours 7 days service and creating more cost effective transactions for financial institution.

Technology continues to make a dramatic and profound impact in service industry and radically shapes how services are delivered. In the banking sector, technological dimensions affect the marketing and distribution of products or services. The same products can be distributed via different distant channels depending on the technology and delivery channels used (Binter, et al 2002).

As Parisa (2006), stated development in telecommunication and information technology has aided innovation in the banking business. The emergence of Automated Voice Response technology enabled banks to offer telephone banking services to their customers. Recently the banks managed to offer banking services to their customers using personal computers operated by customers at their convenience over the internet. He also stated the internet technology is playing a vial role in the banking industry like on other areas.

According to Vinton Cerf, the father of internet, the internet which was born in 1969, would certainly 'catch fire" Cerf estimated that three billion users would be online by 2010 and the number of devices online could be anywhere from six to thirty billion by 2020. Obviously the impact of the internet technology on human beings' ways of life cannot be underestimated as the use of internet for information as well as doing business becomes increasing through time.

Two crucial factors face the financial services industry as it enters the third millennium. First, consumers continue to demand individualized goods and services, and demand them faster than ever. Second, the world is undergoing a "Knowledge Revolution" whose consequences will dwarf even those of industrial revolution. These two trends converge in the new digital media that will allow everyone to interact and transact with their banks from virtually anywhere (Chai, 2006).

As Browni: Molla (2005) mentioned most banks in developed and some in developing parts of the world are now offering E-banking services with various levels of sophistication. History of the E-banking tells that many established banks in developed countries began with ATMs and evolved through personal computer banking, telephone banking, internet banking, and mobile banking. It appears that E-banking has dawned in Africa with internet banking. Similarly, Richard and Alemayehu (2006) also stated that most African banks also seem to be content with having a web presence with only few of them making strides towards full-fledged E-banking applications.

2.4 E-banking in Ethiopia

The appearance of E-banking in Ethiopia goes back to the late 2001, when the largest state owned, commercial bank of Ethiopia (CBE) introduced ATM to deliver service to the local users. Despite being the pioneer in introducing ATM based payment system, CBE lagged behind Dashen Bank, which worked aggressively to maintain its lead in E-payment system. As CBE continued to move at a snail's pace in its turnkey solution for card based payment system, Dashen Bank remained so far sole player in the field of E-banking since 2006 (Gardachew, 2010).

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By the end of 2008 Wegagen Bank has signed an agreement with Technology Associates, a Kenyan based information technology firm, for the development of the solutions for the payment system and installation of network of ATM. While Zemen Bank, the only Ethiopian bank anchored in the idea of single branch banking, by launching full-blown internet banking in 2010, which is new to Ethiopian banking industry (Asrat 2010).

Binyam (2009), claimed United Bank being the first to introduce telephone and internet banking

systems including text messages (SMS) by the end of the year 2008 which continued launching ATM and POS services in collaboration with Awash |International Bank and Nib International Bank in the year 2012 later joined by Birhan International Bank, Addis International bank and Cooperative Bank of Oromia. The three banks planned to install over 140 ATM machines and over 340 POS across Ethiopia. And there will be one ATM at every branch of the consortium banks, all domestic airports and shopping complexes. Binyam (2009), also stated that this agreement is the first significant cooperation between competing banks in Ethiopia, which others should be encouraged to follow as there is no single bank in Ethiopia that can afford to provide extensive geographical coverage and access.

Table 2.1 in Annex 1 provides the E-banking services, which are provided by Ethiopian banks.

2.5 Models of IT Adoption

These days, information technology (IT) is universally regarded as an essential tool in enhancing the competitiveness of the economy of a country. It is commonly accepted today that IT has significant effects on the productivity of firms. These effects will only be fully realized if, and when, IT are widely spread and used. It is crucial, therefore, to understand the determinants of IT adoption and the theoretical models that have arisen addressing IT adoption.

The most used theories for technology adoption are the technology acceptance model (TAM) (Davis F. 1989), theory of planned behavior (TPB) (Ajzen 1985, Ajzen 1991), unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.* 2003), diffusion of innovation (DOI) (Rogers 1995), technology organization environment (TOE) framework (Tornatzky and Fleischer 1990), institutional theory and Iacovou et al. (1995) model. From these IT adoption models while TAM, TPB and UTAUT are individual level models, DOI, TOE, institutional theory and Iacovou et al. (1995) models are at the firm level (Tiago and Maria 2011).

The following section will discuss some of the above IT adoption models in detail.

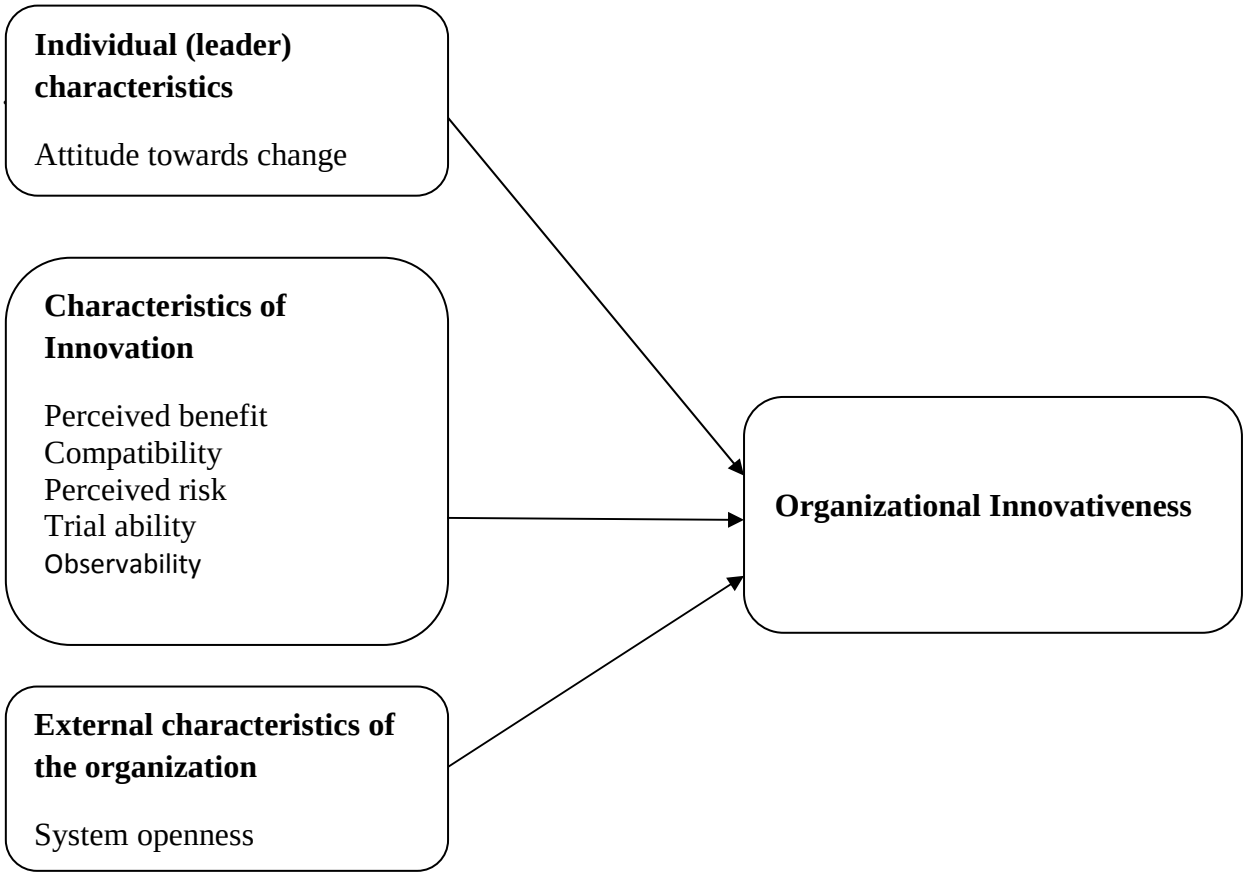
2.5.1 Diffusion of Innovation (DOI)

As Rogers explained DOI is a theory of how, why, and at what rate new ideas and technology spread through cultures, operating at the individual and firm level. DOI theory sees innovations as being communicated through certain channels over time and within a particular social system. Individuals are seen as possessing different degrees of willingness to adopt innovations, and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time. Breaking this normal distribution into segments

leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, laggards (Rogers 1995). The innovation process in organizations is much more complex. It generally involves a number of individuals, perhaps including both supporters and opponents of the new idea, each of whom plays a role in the innovation-decision (Rogers 1995).

Based on DOI theory at firm level, Rogers stated innovativeness is related to such independent variables as individual (leader) characteristics, characteristics of innovation, and external characteristics of the organization. As shown in Figure 2, individual characteristics describe the leader attitude toward change. Characteristics of innovation include relative advantage (perceived benefit), compatibility, perceived risk, trial ability and observability. As Roger stated the characteristics of innovations, as perceived by individuals, help to explain their different rate of adoption.

Figure 2: Diffusion of innovations



Source : Rogers, 1995

Rogers explained the independent variables as follows:

Relative advantage (perceived benefit) is the degree to which an innovation is perceived as better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, but social-prestige factors, convenience, and satisfaction are also often important components. It does not matter so much whether an innovation has a great deal of "objective" advantage. What does matter is whether an individual perceives the innovation as advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is going to be.

Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. An idea that is not compatible with the prevalent values and norms of a social system will not be adopted as rapidly as an innovation that is compatible. The adoption of an incompatible innovation often requires the prior adoption of a new value system.

Perceived risk is the degree to which an innovation is perceived as difficult to understand and use. Some innovations are readily understood by most members of a social system; others are more complicated and will be adopted more slowly.

Trial ability is the degree to which an innovation may be experimented within a limited basis. New ideas that can be tried on the installment plan will generally be adopted more quickly than innovations that are not divisible.

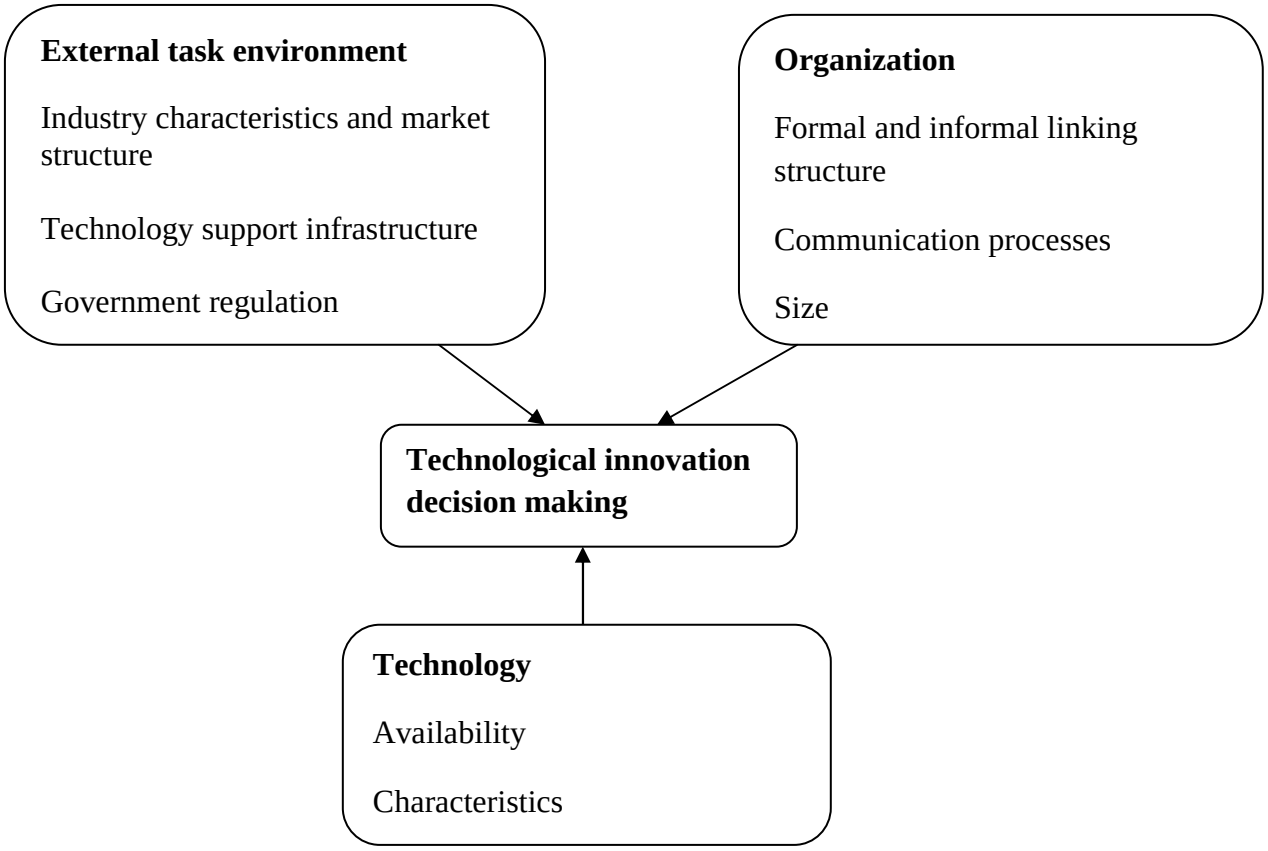
Observability is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt. Such visibility stimulates peer discussion of a new idea, as friends and neighbors of an adopter ask him or her for innovation-evaluation information about it.

External characteristics of organization refer to system openness.

2.5.2 Technology, Organization and Environment Framework

The TOE framework was developed in 1990 (Tornatzky and Fleischer 1990). It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context (Figure 3) (a) Technological Context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm as well as the set of available technologies external to the firm (Thompson 1967, Khandwalla 1970, Hage 1980). (b) Organizational Context refers to descriptive measures about the organization such as scope, size, and managerial structure. (c) Environmental Context is the arena in which a firm conducts its business—its industry, competitors, and dealings with the government (Tornatzky and Fleischer 1990).

Figure 3: Technology, organization and environment framework



Source: Tornatzky and Fleischer 1990

As further stated by Tornatzky and Fleischer (1990), the TOE framework as originally presented,

and later adapted in IT adoption studies, provides a useful analytical frame work that can be used for studying the adoption and assimilation of different types of IT innovation. The TOE framework has a solid theoretical basis, consistent with empirical support (see Table 2.2 in annex 2) and the potential of application to IS innovation domains, though specific factors identified within the three contexts may vary across different studies.

This framework is consistent with the DOI theory, in which Rogers (1995) emphasized individual characteristics, and both the internal and external characteristics of the organization, as drivers for organizational innovativeness. These are identical to the technology and organization context of the TOE framework, but the TOE framework also includes a new and important component, environment context. The environment context presents both constraints and opportunities for technological innovation. The TOE framework makes Rogers' innovation diffusion theory better able to explain intra-firm innovation diffusion (Hsu *et al.* 2006).

2.5.2.1 Studies that Used the TOE Framework

Several authors used only the TOE framework to understand different IT adoptions, such as: electronic data interchange (EDI) (Kuan and Chau 2001); open system (Chau and Tam 1997); web site (Oliveira and Martins 2008); e-commerce (Liu 2008); enterprise resource planning (ERP) (Pan and Jang 2008); e-business (Zhu et al. 2003, Zhu and Kraemer 2005). The variables analyzed are presented in Table 2.2 in annex 2.

2.5.3 Institutional Theory

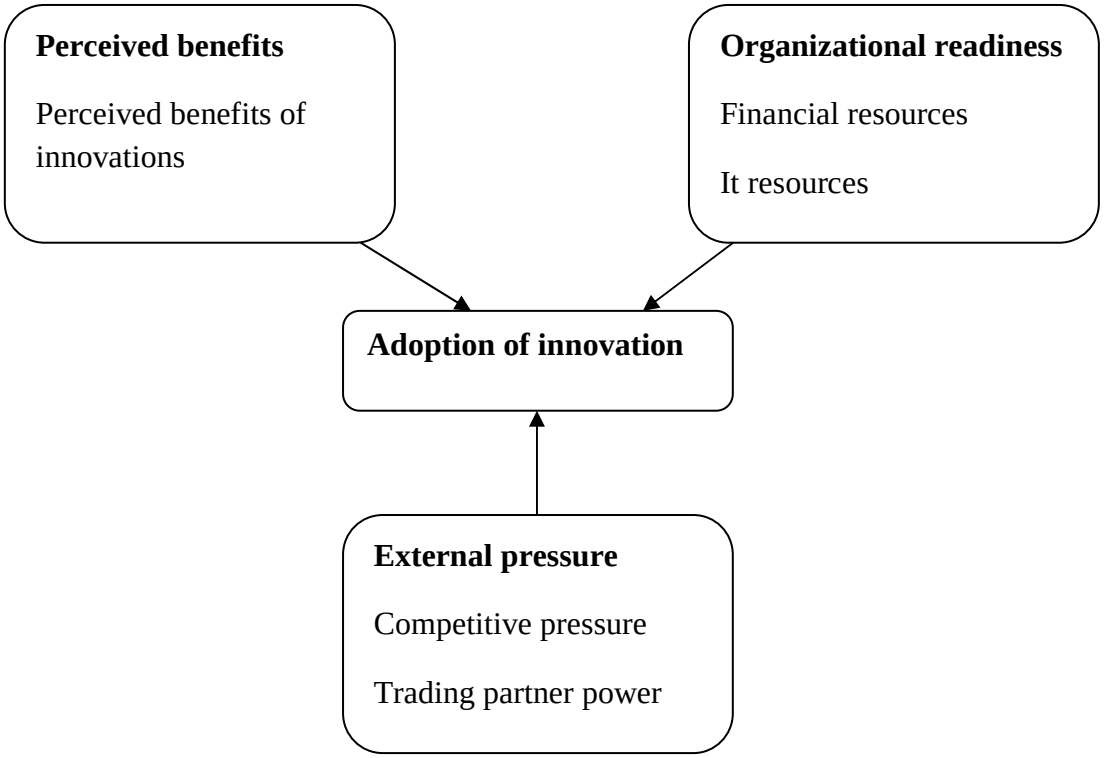
Institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions (Scott and Christensen 1995, Scott 2001). According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy (Dimaggio and Powell 1983). This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government.

Several studies have taken an institutional approach to e-commerce or EDI diffusion and assimilation (Purvis R. 2001, Chatterjee D. 2002, Teo H. 2003). It is well known that mimetic, coercive, and normative institutional pressures existing in an institutionalized environment may influence organizations' predisposition toward an IT-based inter organizational system (Teo H. 2003). Mimetic pressures are observed when firms adopt a practice or innovation imitating competitors (Soares-Aguiar and Palma-Dos-Reis 2008). As Dimaggio and Powell stated coercive pressures are a set of formal or informal forces exerted on organizations by other organizations upon which the former organizations depend. Normative pressures come from dyadic relationships where companies share some information, rules, and norms. Sharing these norms through relational channels amongst members of a network facilitates consensus, which, in turn, increases the strength of these norms and their potential influence on organizational behavior.

2.5.4 Iacovou et al. Model

Iacovou et al. (1995) model analyzed inter organizational systems (IOSs) characteristics that influence firms to adopt IT innovations in the context of EDI adoption. Their framework is well suited to explain the adoption of an IOS. It is based on three factors: perceived benefits, organizational readiness, and external pressure (see Figure 4). Perceived benefit is a different factor from the TOE framework, whereas organizational readiness is a combination of the technology and organization context of the TOE framework. Hence, as an IT resource is similar to technology context, financial resources is similar to organizational context. The external pressure in the Iacovou *et al.* (1995) model adds the trading partners to the external task environmental context of the TOE framework as a critical role of IOSs adoptions (Tiago et al 2011).

Figure 4: Iacovou et al (1995) model



Source: Tiago et al. (2011)

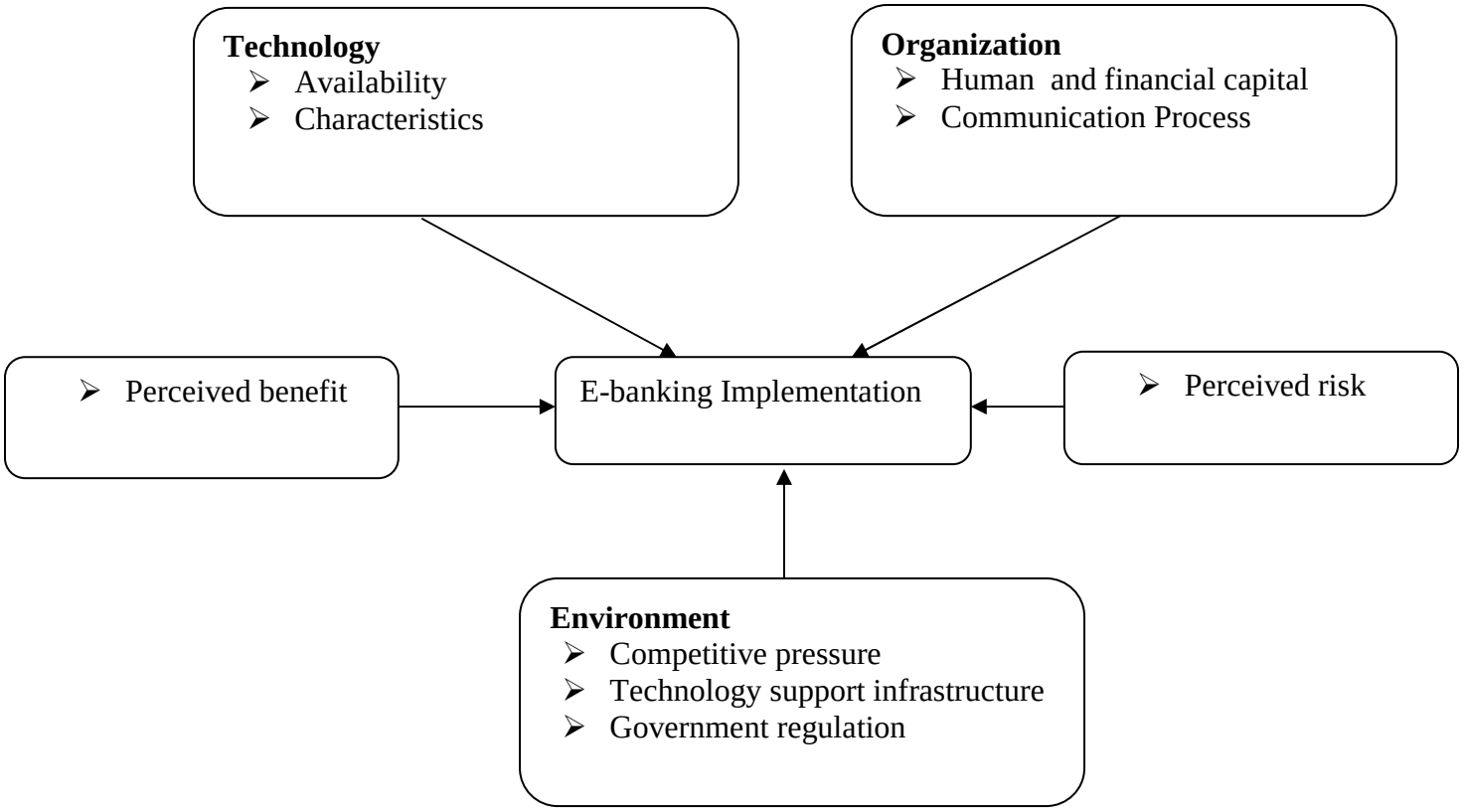
2.6 Research Framework

To explore the key drivers and barriers to E-banking adoption in Ethiopia, this study is guided by technology-organization-environment (TOE) framework proposed by Tornatzky and Fleischer which is designed for studying the likelihood of adoption success of technology innovations. This framework is a comprehensive and well received framework in the context of innovation adoption by organizations and has been used in many studies. According to Tornatzky and Fleischer, technology adoption within an organization is influenced by factors pertaining to the technological context, the organizational context, and the external environment.

Based on this, the following research framework will be used to summarize possible key factors affecting E-banking adoption as shown in Figure 5. **The technological** context refers to both the internal and external technologies relevant to the firm and adopter's perception of E-banking attributes. Typical characteristics of technology considered in technology adoption are based on Roger's diffusion of innovation theory (Roger 1995), which includes relative advantages

(perceived benefits), and perceived risks which we cannot find in the TOE framework but are the major factors which should be considered in technological adoption. **The organizational context** refers to the organization's characteristics that influence its ability to adopt and use E-banking. **The environmental context** refers to the external environment in which an organization operates and its condition for supporting the development of E-banking services. As stated by Tornatzky and Fleischer (1990) and as per different studies stated in Table 2.1 above specific factors identified within the three contexts vary across different studies. Factors considered in this study are discussed below.

Figure 5: Research Framework



Source: Tornatzky and Fleischer (1990), Iacovou et al(1995) and Rogers (1995)

2.6.1 Technological Context

Since the technological context covers both the internal and external technologies relevant to the firm and adopter's perception of E-banking. We consider two factors; availability of technology, and characteristics.

Availability of Technology

Availability of technology which is a major factor that affects the adoption of E-banking as the case for other electronic commerce initiatives is also considered in this study. Similarly Scupola (2003), stated that without an adequate development level and quality of nation's IT infrastructure E-banking adoption cannot flourish.

Characteristics

Not only the availability of technology sufficient enough for adoption of innovation like E-banking but also the characteristics of the technology is crucial for technology adoption. In this study also quality of telecommunication network is considered which is one of the characteristics of technology that can affect adoption of technological services like E-banking.

2.6.2 Organizational Context

Organizations are different in their inclination to adopt innovation technology influenced by a number of factors (Lacovou 1995). In addition to this as stated by Tornatzky and Fleischer (1990), organizational context refers to descriptive measures about the organization. In this study human and financial capital, and communication processes are considered. Human and financial capital is considered because organizational context is the descriptive measure about the organization as defined by Tornatzky and Fleischer (1990). The other factor that is communication process which includes communication between employees and management is also taken in this study. Formal and informal linking structure and size are not considered in this study as we don't find it relevant for E-banking implementation.

Financial and Human Capital

Financial resources are an important factor in facilitating innovation adoption for any organization (Kuan and Chau 2001). Therefore, it is expected that the availability of financial resources within the adopting firms is important for E-banking adoption. These resources enable banking institutions to obtain human related resources including the required skills and expertise to develop and support E-banking services. In this study availability of financial resource, availability of training facilities and support from management are studied.

Communication Process

Effective and well applied communication process is vital for implementation of any technological adoption including E-banking (Scupola 2003). In this study we consider how well the communication is between employees and management in the implementation process and training facilities for implementation of E-banking

2.6.3 Environmental Context

Factors related to the environmental context play a crucial role in technology adoption and some factors in this category are arguably more influential than others, especially when countries under study have an authoritative government leadership (Sherah 2008). Three factors considered under this section are competitive pressure, technology support infrastructure and government regulation as stated in Torntzky and Flischer (1990). Industry characteristics and market structure is not considered in this study as we don't find relevant.

Competitive Pressure

Competitive pressure can strongly influence any bank to develop and adopt E-banking initiatives and it may affect the bank's perception towards E-banking services as implied in previous studies (Gibbs and Dedrick 2003). This study also takes competitive pressure as mentioned in TOE framework of Tornatzky and Fleishcer (1990).

Technology Support Infrastructure

As stated by Tornatzky and Fleischer (1990) environmental context is the arena in which a firm conducts its business - its industry, competitors, and dealings with the government. Government can either directly or indirectly affect the adoption of E-banking in terms of creating a favorable environment and impetus for banking institutions and their customers so that the services can be diffused with the community (Kuan and Chau 2001). In this study technology support infrastructure is considered by taking in to consideration whether government support E-banking implementation through providing technological inputs and by creating favorable environment.

Government Regulation

Government regulation which is necessary for the well functioning of the economy is also needed for successful adoption of technological services through creation of health legal environment. Similarly, Tan and Wu (2002) expressed that the existence and maturity of electronic commerce legal frameworks within a country influence the diffusion of online

transactions including E-banking as demonstrated in various studies. In this study also the availability of legal framework in the country is studied.

The other two factors perceived benefits and perceived risks are taken from Iacovou et al (1995) model and Rogers (1995) Diffusion of Innovation model respectively. We add thess two factors because we find them important in the adoption of innovation like E-banking which is not included in TOE model of Tornatzky and Fleischer (1990).

Perceived Benefits

Perceived benefits of E-banking cover both direct and indirect benefits for the banking institutions. Direct benefits include the savings on operational cost, improved organizational functionality, productivity gain, improved efficiency and increased profitability. Indirect benefits include the opportunity or intangible benefits such as improved customer's satisfaction through improved services, improved banking experiences and fulfillment of their changing needs and lifestyle (Lu et al.2005 and Kuan & Chau 2001).

Perceived Risks

One of the important risks faced by banking institutions in offering E-banking services is the customers' resistance to use the services which significantly hinder the growth of E-banking (Zhao et al. 2008 and Laforet 2005). Issues related to security have always been a concern when dealing with technologies related to online transactions such as E-banking (Rogers 1995). Therefore, the perception of the risks regarding E-banking is expected to influence the adoption and further growth.

2.7 Empirical Evidence

Related studies were conducted on the factors that affect implementation of E-banking. But relatively not much is done in Ethiopia. Under this section some of the researches conducted around E-banking will be discussed.

A research undertaken by Ayana(2014) on factors affecting adoption of E-banking system in

Ethiopian banking industry, focused on factors that affect adoption of E-banking in Ethiopian banking industry. The study statistically analyzes data obtained from survey of staffs of 4 purposely selected banks using qualitative and quantitative research approach on a research framework developed based on technology-organization-environment mode (TOE). And conclude E-banking system such as ATM, mobile banking, internet banking and others were not well adopted by Ethiopian banking industry, due to low level of ICT infrastructure and lack of legal frameworks at NBE. In addition to this the result of the study also showed that security risk and lack of trust on the use of technological adoption are other major barriers for the system. Limited technical and managerial skills available in Ethiopian banks were also mentioned as an influential factor for the choice of technology in Ethiopian banks.

A study done by Shakila and Faria (2012) on practice of E-banking in commercial bank focused on prospects and some drawbacks of E-banking in banking sector of Bangladesh. The study used structured questionnaire and conversation with bankers and found out that prospect of E-banking in Bangladesh were expansion of market for new banking products and services, and reduction in operation costs for banks. More broadly, the continued development of E-banking contributes to improving the efficiency of the banking and payment system and reduces the cost of retail transaction. The government emphasis of raising allocation for developing ICT infrastructure, waving taxes on computer peripherals and competition among banks in improving customer services have accelerated the prospects of E-banking in Bangladesh. The study also mentioned that E-banking can play a significant role in uplifting the entire banking services and thus positively affect the country's economy. Some of the short term advantages found by the study include increase in productivity and efficiency, avoidance of duplication of work and wastage and reduction in service delivery time. While the long term advantages are proper use of resources, planning and monitoring. The study also found constraints of E-banking being limited availability and growth of telecommunication infrastructure, culture of using E-banking, legal and regulatory framework, the user of E-banking being limited to urban areas and infrastructure of villages being not suitable for E-banking.

A study conducted towards effective implementation of E-banking in Nigeria by (Pedro 2012), focused on issues of E-banking as well as strategies that may help to strengthen customer-bank relations for a better public service delivery and to close the design-reality gaps and thus improve E-banking project success rate in Nigeria. The study concluded, for an effective E-banking, the

strategic response should be built on institutional, technological, data systems' awareness and commitment, human legislative and leadership. The design-reality gap challenge associated with E-banking initiatives, western E-banking models and systems should be addressed by customizing the match between Nigerian reality and the design. Thus it will certainly reduce the failure rate and increase the success of E-banking initiatives.

A study conducted by Gardachew (2010) on practices, opportunities and challenges of E-banking in Ethiopia, analyzed the main challenges and opportunities of E-banking. After conducting a survey he came up with the challenges being low level of internet penetration and poorly developed telecommunication infrastructure, lack of suitable legal and regulatory framework for e-commerce and e-payment, high rates of illiteracy, high cost of internet, absence of financial networks that link different banks, lack of reliable power supply and cyber security issues. And mentioned opportunities offered by ICT through e-learning programs, the help of non-governmental agencies like ECA and World Bank to developing countries to design national e-strategies like e-commerce and commitment of the government on ICT as prospects for E-banking development.

A study undertaken by Senait (2007) on prospects and challenges of E-banking, focused on prospects and challenges of E-banking in Ethiopia from the banks perspective and aims to gain a deep understanding of the factors influencing the adoption of E-banking by banks operating in Ethiopia. She used a model of perceived influential factors and tested using questionnaire using a sample drawn from Ethiopian banks' officials who believed to have exposure to the subject matter. In her study she mentioned determinant factors of E-banking in Ethiopia include technological and infrastructural requirement, customers' attitude, capacity of existing banks, capacity of regulatory and supervisory organs in relation to authorization and security and risk management capacity of banks. She also revealed benefits of E-banking which includes reduction of transaction cost, perfect information about customer, increased profitability, variety of products enhancing cross selling, customer loyalty (branding) and wider geographical reach. And the risks involved include strategic risk, compliance risk, and total reliability risk. Thus she concluded the factors tested for the risks involved towards E-banking and the determinant factors of E-banking are found to be effective and recognized as the challenges of e-banking for its successful adoption in Ethiopian market.

The study conducted by Daghfous and Toufaily (2007) on the success and critical factors in adoption of E-banking by Lebanese banks. The research was conducted on the factors that can lead to successful adoption of E-banking and the other factors that can constitute as barrier to its adoption, it focused on the organizational, structural and strategic factors which can accelerate or, on the contrary, slow the adoption of this electronic mode of distribution and communication by the banks, through analyzing the case of the Lebanese market. In order to test the validity of the theoretical framework, structured survey was used and questionnaire was given to E-banking managers or to information technology managers of all the banks on the official list of institutions operating on the Lebanese market. The results of their study shows that the organizational variables (bank size, functional divisions, technical staff, technical infrastructure, perceived risks, decision makers` international experience and mastery of innovation) are variables which exert significant impact on the adoption of E-banking, among the structural characteristics, the result revealed that internal technological environment of the bank is a very important factor in determining the adoption of E-banking. The result also shows that banks which are developing in the international scale are more likely to adopt E-banking innovations. Finally the result of the study indicated that extent of penetration of E-banking in the growth phase of an emerging market has an important correlation with the improvement of commercial performance.

The other descriptive case study analysis conducted by Khalfan *et al* (2006) on factors influencing the adoption of internet banking in Oman, aimed to identify the main potential factors or impediments that are currently inhibiting the incorporation or adoption of E-commerce applications in the Omani Banking sector. Data, used in their study were collected using semi structured interviews and survey questionnaire as well as reviewing some bank documents. The results of their study provide a pragmatic picture about the adoption of E-Commerce applications in the core financial sector domain of Oman. One of the main findings is that security and data confidentiality issues have been a major barrier. The banking sector was reluctant to use E-commerce applications as they felt that transactions conducted electronically were open to hackers and viruses, which are beyond their control. Lack of top management support is the other inhibiting factor in the adoption of electronic commerce applications as per their finding.

In general, review of empirical studies shows that understanding the critical success factors

(CSFs) in E-banking is important for banking industries because it would potentially help them improve their strategic planning process. The main obstacles and barriers that oppose E-banking adoption are the concerns of security, privacy of information and technology investment cost. Also the literature review indicates that according to the customers there are different factors that influencing the adoption of E-banking such as, perceived advantages and other factors related to the services itself and how to be accepted and used by the customers, which differ from country to country, reflecting the economical and technological development in each country. In this study researcher has identified the main barriers and drivers of adopting E-banking in Ethiopian banking industries by using questionnaire distributed to all banks in Ethiopia. The following section, thus, reviews literature related with barriers and benefits/drivers of adopting E-banking system.

2.8 Barriers Related to the Adoption of E-banking

There are lots of reasons which hinder the popularity of E-banking services despite the fact that bankers and customers can get benefit from it. The majority of private banks are still lagging behind the online banking channel. According to Pikkarainen *et al*. (2004) the reasons behind banks for not using the online banking services are:

1. The internet connection being important prerequisite for customers to use online banking services.

2. Before using these online banking services the new users need to learn how to use these internet services.

3. Some non user complaint that the face to face banking situation is quite different from doing banking online so there are no social dimensions while doing online banking.

4. The security issue hinders some customers to use the online banking services.

Mattila (2003) noted perceived difficulty in using computers and lack of personal service in electronic banking were the main barriers while Sathye (1999) identified the security concerns and lack of awareness about internet banking as the main obstacles to non adoption. He pointed

that young, educated and wealthy groups of customers were the most relevant customer segments for the rapid development of Internet banking market.

2.9 Challenges of Adopting E-banking in Ethiopia

According to Gardachew (2010) Ethiopian banking industry faces numerous challenges to adopt E-banking system and grab the opportunities presented by ICT applications in general. The key challenges for E-banking applications as discussed by Gardachew are:

- Low level of internet penetration and poorly developed telecommunication infrastructure: Lack of infrastructure for telecommunications, internet and online payments impede smooth development and improvements in e-commerce in Ethiopia. Most rural areas of the country, where the majority of small and medium businesses are concentrated, have no internet facilities and thus are unable to engage in e-commerce activities.

- Lack of suitable legal and regulatory framework for e-commerce and e-payment: Ethiopian current laws do not accommodate electronic contracts and signatures. Ethiopia has not yet enacted legislation that deals with e-commerce concerns including enforceability of the validity of electronic contracts, digital signatures and intellectual copyright and restrict the use of encryption technologies.

- High rates of illiteracy: Low literacy rate is a serious impediment for the adoption of E-Banking in Ethiopia as it hinders the accessibility of banking services. For citizens to fully enjoy the benefits of E-Banking, they should not only know how to read and write but also possess basic ICT literacy.

- High cost of Internet: The cost of Internet access relative to per capita income is a critical factor. Compared to the developed countries, there are higher costs of entry into the e-commerce market in Ethiopia. These include high start-up investment costs, high costs of computers and telecommunication and licensing requirements.

- Frequent power interruption: Lack of reliable power supply is a key challenge for

smoothly running E-banking in Ethiopia.

2.10 Benefits of Adopting E-banking System

It is essential for banks to have the official bank website providing the possibility to do transactions so that banks can be qualified in providing online banking services (Pikkarainen *et al.,* 2004). According to Giglio (2002) and Robinson (2000) in delivering banking products the cheapest way can be done only through the Online Banking. Similarly Karjaluoto *et al.* (2002) stated that with the help of online banking services, the branch networks of banks have reduced and customers are satisfied to use the online banking services as it will save a lot of time and effort to go to branch to perform these transactions.

Polatoglu and Ekin (2001) argued that early adopters and heavy users of E-banking services were more satisfied with the services compared to the other customer groups. Likewise the study of Joseph and Stone (2003) stated that the ability of delivering services via technology appears to be correlated with high satisfaction with services deemed most important to customers.

It should be noted that E-banking can bring about various benefits for banks and their customers as well. It is obvious that cost savings, efficiency, gaining new segments of customers, improvement of the bank's reputation and better customer services and satisfaction are primary benefits to banks (Jayawardhena & Foley, 2000). As Robinson (2000) viewed, relevant costs for conducting a banking transaction via online are much lower than via a brick and mortar branch. Moreover, Sheshunoff (2000) stated that one of the most important factors influencing the adoption of E-banking by banks is the need to build up strong barriers to exit customers. Under the view of the author, once customers become familiar with the utilization of full service of E-banking, it is unlikely that they will change to another financial institution.

Such an argument can be supported by the consumer behavior theory that switching costs are often very high in terms of time and efforts by consumers. Finally, the author emphasizes that the implementation of E-banking can bring about many competitive advantages for banks in today's highly competitive banking market.

It should be noted that E-banking not only brings benefits to banks but also to their customers.

Pham (2010) stated that with the emergence of the Internet banking transactions are no longer limited to time and geography. It is very easy for consumers throughout the world to access to their bank accounts 24 hours per day and seven days a week. Customers can enjoy a variety of services, especially services which are not provided by traditional bank branches .It is argued that one of the greatest benefits that E-banking brings about is that it is not expensive or even free for customers to utilize E-banking products/services. However, some people believe that prices appear to be one factor that is impedimental to the diffusion of E-banking (Sathye 1999). The price debates often revolve around geographical differences and disparities between costs of Internet connections and telephone call pricing. It has also been believed that E-banks have been changing to respond to customers' increasingly changing demands (Pham 2010). There has been a tendency that customers' don't want to travel to or from a bank branch to conduct some banking transactions. In other words, they want to utilize E-banking to save time and money. E-banking can bring about convenience and accessibility, which will have positive effects on customer satisfaction and loyalty (Pham 2010). It is totally possible for customers to manage their banking transactions whenever they want and to enjoy improved privacy in their interactions with the bank. In addition, customers can enjoy more benefits at lower cost levels by utilizing E-banking (Mols 1998).

It is also stated by Turban (2008), that E-banking is really beneficial to customers in terms of cost savings, no limit on time and space, quick response to customer complaints, and better services/products. Such benefits are believed to elevate customer satisfaction.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The study adopted quantitative research method and used descriptive method of data analysis to obtain the desired results of the study. In the course of analyzing the problems, primary data collection procedure was employed. In order to find answer to the research questions, closed ended questionnaire was used as a main tool.

3.2 Target Population

The target population of the study is banks in Ethiopia which started to implement E-banking services and those which are on their way to adopt E-banking system. As there are 19 banks in Ethiopia, the researcher selected 17 banks which started to give E-banking services and those which are on their way. Based on the preliminary investigation there are 150 E-banking professional staffs in the seventeen banks and questionnaire was distributed to all of them. E-banking professional staffs are those IT professionals that are working on internet banking, mobile banking, ATM and POS. Those respondents were targeted because, they are deemed to be knowledgeable about E-banking system and could provide important perspectives on its implementation. The following Table 3.1 depicts the number of E-banking professional staffs in each bank.

Table 3.1 E-banking professional staffs in each bank

No	Name of the Bank	No. of E-Banking Staffs
1	Abay Bank	4
2	Addis International Bank	4
3	Awash International Bank	12
4	Bank of Abyssinia	11
5	Berhan International Bank	3
6	Bunna International Bank	3
7	Commercial Bank of Ethiopia	30
8	Cooperative Bank of Oromia	3
9	Dashen Bank	16
10	Debub Global Bank	4
11	Enat Bank	4
12	Lion International Bank	5
13	Nib International Bank	10
14	Oromia International Bank	5
15	United Bank S.C.	3
16	Wegagen Bank	10
17	Zemen Bank	23

3.3 Source of Data and Collection Instrument

The necessary data for this study is collected from primary sources. In order to gather the data from relevant sources, primary data collection instrument is used. The survey instrument, questionnaire was developed using technology-organization-environment framework. The questionnaire was structured in closed-ended type of questions and responses to the questions were measured on a five Likert rating scale. The questionnaire was divided into two sections. Section one captured general information about the respondents while section two captured information about the barriers faced in implem entation and usage of E-banking services and perceived benefits of using E-banking system. Five point Likert scales that are: 1(strongly disagree), 2(Disagree), 3(Neutral), 4(Agree), 5(strongly agree) are used for the total of 24

questions to measure the responses. Questionnaires were distributed to all E-banking professional staffs of the banks in Ethiopia which implement E-banking and which are on their way to implement.

Additional data were obtained by examining various documents including bank reports, local and international articles related with issues of E-banking system, research reports, books and journal articles.

3.4 Method of Data Analysis

The collected data were analyzed and interpreted using quantitative techniques. Analysis of data in this research is done using statistical tools like frequency, mode, and median. In order to support the analysis tables and percentages from survey result are also incorporated. Data analysis was performed using SPSS software.

3.5 Validity

The factors that are used to describe the barriers and drivers of E-banking implementation were developed and adopted after thorough review is made on different researchers' work and detailed evaluation of technology adoption frameworks was done.

3.6 Ethical Issues

Ethics is one of the major considerations in research. Hence the study has incorporated the following ethical considerations.

- Respondents were clearly communicated about the objective of the study before they were asked to give their answer.
- Respondents were not asked about their name, race and religion etc.
- The questionnaire was distributed after getting the consent of the banks.

CHAPTER FOUR: DATA PRESENTATION AND

ANALYSIS

As it is discussed in the methodology part of this study, data was collected using questionnaire. A total of 150 questionnaires were distributed to the E-banking professional staffs of all the 17 banks of which one is state owned, which started to give E-banking services. Out of 150 questionnaires 114 were obtained (76% response rate) as described in the table 4 annex 3. In order to analyze the research results, statistical package for social sciences (SPSS) software is used.

4.1 Barriers of implementing E-banking in Ethiopia

Although there are many associated benefits with the implementation of E-banking, there are many reasons which obstruct implementation of the system. In the case of Ethiopian banking industry, there are still some banks which are using the old banking system. In the following section the technological, organizational and environmental factors that hinder implementation of E-banking will be discussed.

4.1.1 Technological Factor

The issues raised in this study in relation with technological factor are availability of information technology infrastructure for implementation of E-banking, quality of telecommunication network and technology being compatible with expectations and requirement of banks. On the other hand perceived risks are also considered as possible barrier a firm faces while adopting technological innovations. The following table shows survey result for the technological factor.

Table 4.1 Technological factor

		Q1B_The necessary information technology infrastructure for implementation of E-banking is not easily available	Q2B_Quality of telecommunication network is not good enough to perform transactions	Q3B_The technology available is not compatible with expectations and requirement of the bank	Perceived Risks	
					Q4B_Customers fear risk to make use of E-banking services	Q5B_Lack of confidence with the security aspects considered as barrier for implementation of E-banking system
N	Valid	113	114	114	113	111
	Missing	1	0	0	1	3
Mean		3.43	4.05	3.08	3.41	3.23
Std. Deviation		1.164	.967	1.074	1.041	1.027

Note: N-Number of responses: Response measurements 1-Strongly Disagree 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

Source: Survey Result, 2015

The result presented in the above table shows that, the respondents asked whether the necessary information technology infrastructure for implementation of E-banking is not easily available, and the descriptive statistics result gives mean value of 3.4, that means the largest number of respondents agreed on the issue. Therefore necessary information technology infrastructure being not easily available is one of the factors that hinder implementation of E-banking system in the country. Similarly the result shown on the above table revealed that lack of good quality telecommunication network to perform transactions is considered as barrier for implementation of E-banking with mean value of 4.

One of the basic barriers a firm faces, while adopting technological innovation is the perceived risks. This is supported by the survey result shown on the above table that indicate customers fear risk to make use of E-banking services, which makes it one of the factors that can hinder implementation of technological innovation by Ethiopian banks.

4.1.2 Organizational Factor

One of the basic issues related with organizational factor is the availability of finance as well as skilled human resource to implement the system. In this study financial need, required technical skills and managerial support to implement E-banking system were considered as organizational factors.

Table 4.2 Organizational Factor

		Q7B_Lack of timely information communication between employees and management and participation of employees in the implementation process.	Q8B_Lack of adequate training for staffs when introducing new technological services.	Q9B_Absence of strong and proactive top management support	Q10B_Lack of skill to implement E-banking system	Q11B_Lack of adequate financial resource for E-banking implementation
N	Valid	114	114	112	112	114
	Missing	0	0	2	2	0
Mean		3.44	3.74	3.37	3.02	2.86
Std. Deviation		.932	1.031	1.115	1.139	1.233

Note: N-Number of responses, Response measurements 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

Source: Survey Result, 2015

As it is shown in the above table the majority of respondents with a mean value of 3.4 agreed on lack of timely information communication between employees and management and participation of employees in the implementation process is one of the barriers faced when implementing E-banking in Ethiopian banks. Likewise the study result revealed that lack of adequate training for staffs when introducing new technological services and absence of strong and proactive top management support are barriers for the adoption of E-banking system with a mean value of 3.7 and 3.4 respectively. On the other hand the majority of respondents have neutral view on lack of adequate financial resource for E-banking implementation which shows that Ethiopian banks are not likely to face financial problem while adopting technological services like E-banking. Similarly, the majority of respondents have neutral view on lack of skill to implement E-banking system.

4.1.3 Environmental Factor

Another factor which can affect the adoption of technological innovation in the banking industry is an external environment. In this study three basic environmental factors are considered, these are; competition among local banks, government support and legal framework. The result obtained from survey regarding these issues is presented in the following section.

4.1.3.1 Competition

As it is stated in different E-banking literature, competitive pressure is considered as driver for the adoption of E-banking in developed countries. For example, the study of Laforet (2005) suggested that, foreign funded banks are more competitive in securing corporate clients over the Chinese banks because they are perceived to offer better services and more stringent security measures given their longer experience in E-banking development. From the survey result indicated in table 4.3 below we can see majority of respondents who are about 40 percent disagree on lack of competition among local banks. This indicates that there is competition that helps Ethiopian banks to go forward for the adoption of E-banking.

Table 4.3 Competition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	14.9	15.0	15.0
	Disagree	46	40.4	40.7	55.8
	Neutral	16	14.0	14.2	69.9
	Agree	27	23.7	23.9	93.8
	Strongly Agree	7	6.1	6.2	100.0
	Total	113	99.1	100.0	
Missing	System	1	.9		
Total		114	100.0		

Source: Survey Result, 2015

4.1.3.2 Government Support

The study of Sherah (2008) noted that government support is the major driver for the adoption of E-banking in China. Similarly the study of Chong and Pervan (2007) survey of Australian small and medium sized enterprises suggested that government initiative is the most significant factor determining the extent and deployment of E-banking adoption.

As it is depicted in the below table 4.4 respondents were asked whether lack of government support towards E-banking implementation is a factor for the adoption of E-banking in Ethiopia and most of them who are 44 percent agreed that lack of government support affects adoption of E-banking by Ethiopian banks. From the banks surveyed private banks constitute the largest part. And those who agreed to lack of government support were from private banks.

Table 4.4 Lack of Government support towards E-banking implementation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.8	1.8	1.8
	Disagree	14	12.3	12.3	14.0
	Neutral	28	24.6	24.6	38.6
	Agree	50	43.9	43.9	82.5
	Strongly Agree	20	17.5	17.5	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

4.1.3.3 Lack of Legal Framework

As stated by Ayana, (2012) electronic payments are not currently covered in Ethiopian legal system. Lack of such legal framework thus hinder the introduction of cost effective modern electronic payment instruments such as ATMs, credit and debit cards, mobile/telephone/internet banking. Similarly the study of Gardachew, (2010) revealed that lack of legal framework is one of the challenges for E-banking system in Ethiopia. Likewise survey result presented in table 4.5 below revealed that 38 percent of the respondents agree that absence of legal framework in the country towards electronic commerce has been a barrier for implementation of E-banking in Ethiopia. On the other hand lack of legal framework that enforce banking industries to adopt technological innovation is also considered as a barrier for implementation of E-banking in

Ethiopia which is agreed by 42 percent of the respondents which can be seen from the survey result indicated in table 4.6

Table 4.5 Absence of legal framework towards electronic commerce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	4.4	4.4	4.4
	Disagree	18	15.8	15.8	20.2
	Neutral	32	28.1	28.1	48.2
	Agree	43	37.7	37.7	86.0
	Strongly Agree	16	14.0	14.0	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

Table 4.6 Lack of legal framework that enforce banking industries to adopt technological innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.8	1.8	1.8
	Disagree	16	14.0	14.3	16.1
	Neutral	33	28.9	29.5	45.5
	Agree	47	41.2	42.0	87.5
	Strongly Agree	14	12.3	12.5	100.0
	Total	112	98.2	100.0	
Missing	System	2	1.8		
Total		114	100.0		

Source: Survey Result, 2015

4.2 Perceived Benefit from Implementing E-banking System

An advantage that is expected to be gained from the adoption of E-banking covers both direct and indirect benefits for the banking industries. Direct benefits include savings on operational cost, improved organizational functionality, productivity gain, improved efficiency, saving of time and increased profitability. Indirect benefits include the opportunity or intangible benefits such as improved customer satisfaction through improved services, improved banking experience and fulfillment of their changing needs and lifestyle (Lu 2005; Kuan 2001). In this study the direct benefits are classified as ease of use and usefulness while the indirect benefits are classified as other benefits.

4.2.1 Direct Benefits

Giglio (2002) suggests that adopting online banking services reduce the work load over the banking staff and it is easy to have more satisfied customers. The data obtained from the survey in this study also confirms the finding of Giglio (2002) as it is shown in table 4.7 that the majority of respondents who are 65 percent strongly agree on the benefit of E-banking to perform banking tasks in a simple way.

Table 4.7 To perform banking tasks in a simple way

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.9	.9	.9
	Disagree	1	.9	.9	1.8
	Agree	38	33.3	33.3	35.1
	Strongly Agree	74	64.9	64.9	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

In addition to the above E-banking simplifies the activity of workers as can be seen in the below table 4.8 that 54 percent of the respondents strongly agree.

Table 4.8 Simplifies the activity of workers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	.9	.9	.9
	Neutral	4	3.5	3.5	4.4
	Agree	47	41.2	41.2	45.6
	Strongly Agree	62	54.4	54.4	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

Souza (2002) noted that the combination of higher technology and higher skill have posted a higher turnover for banks as they have been able to provide better customer support and have managed their assets well. Second, customers can get banking service at lower costs compared with traditional banking service, because it is cheaper to make transaction over electronic fund transfer. Similarly the study of Balachandher (2010) noted that online banking fees have reduced over the years and became less expensive when compared with traditional system. Likewise, the survey result confirmed that E-banking helps to perform transactions at lower cost which is agreed by most of the respondents (45 percent) as shown below in table 4.9

Table: 4.9 helps to perform transactions at lower cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.9	.9	.9
	Disagree	2	1.8	1.8	2.6
	Neutral	12	10.5	10.5	13.2
	Agree	51	44.7	44.7	57.9
	Strongly Agree	48	42.1	42.1	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

In addition to the above by implementing E-banking speed and efficiency in service delivery can

be attained and is convenient in terms of time saving. These are supported by the majority of respondents in table 4.10 and 4.11 who strongly agree with 48 and 62 percent respectively to these benefits derived from implementation of E-banking. However, such claims can be expected under conditions of strong network capacity.

Table 4.10 Speed and efficiency in service delivery is attained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	6.1	6.2	6.2
	Agree	52	45.6	46.0	52.2
	Strongly Agree	54	47.4	47.8	100.0
	Total	113	99.1	100.0	
Missing	System	1	.9		
Total		114	100.0		

Source: Survey Result, 2015

Table 4.11 E-banking services are convenient in terms of time saving

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.9	.9	.9
	Neutral	2	1.8	1.8	2.6
	Agree	40	35.1	35.1	37.7
	Strongly Agree	71	62.3	62.3	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

The largest number of respondents with 40 percent which is depicted in table 4.12 agreed that increase productivity and profitability of banks is one of the benefits that can be generated from implementation of E-banking.

Table 4.12 Increased productivity and profitability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.8	1.8	1.8
	Neutral	34	29.8	29.8	31.6
	Agree	46	40.4	40.4	71.9
	Strongly Agree	32	28.1	28.1	100.0
	Total	114	100.0	100.0	

Source: Survey Result, 2015

4.2.2 Indirect Benefits

In addition to the direct benefits there are also indirect benefits which can be attained from implementation of E-banking system.

Indirect benefits of E-banking system identified in this study are; improvement in customer service, reduced number of customers visiting the branch, and unlimited time of access to bank account and information. When we look at the results from the survey in table 4.13 below most of the respondents strongly agree on improvement in customer service which can be achieved by E-banking implementation.

Table 4.13 Improvement in customer service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	.9	.9	.9
	Neutral	11	9.6	9.7	10.6
	Agree	46	40.4	40.7	51.3
	Strongly Agree	55	48.2	48.7	100.0
	Total	113	99.1	100.0	
Missing	System	1	.9		
Total		114	100.0		

Source: Survey Result, 2015

Similarly as can be seen from table 4.14 below the majority of respondents with 45 percent agree

E-banking implementation leads to reduced number of customers visiting the branch.

Table 4.14 Reduced number of customers visiting the branch

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	3.5	3.5	3.5
	Disagree	3	2.6	2.7	6.2
	Neutral	16	14.0	14.2	20.4
	Agree	51	44.7	45.1	65.5
	Strongly Agree	39	34.2	34.5	100.0
	Total	113	99.1	100.0	
Missing	System	1	.9		
Total		114	100.0		

Source: Survey Result, 2015

As can be seen from table 4.15 below 63 percent of the total respondents strongly agreed on the benefit that E-banking system enables unlimited time of access to bank account and information.

Table 4.15 Unlimited time of access to bank account and information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.8	1.8	1.8
	Disagree	5	4.4	4.4	6.2
	Neutral	6	5.3	5.3	11.5
	Agree	28	24.6	24.8	36.3
	Strongly Agree	72	63.2	63.7	100.0
	Total	113	99.1	100.0	
Missing	System	1	.9		
Total		114	100.0		

Source: Survey Result, 2015

CHAPTER FIVE:
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

The study proposed to examine the main barriers and drivers of E-banking implementation in Ethiopia guided by technology-organization-environment framework. Based on this framework the study has identified a number of barriers and drivers that could affect E-banking implementation.

The technological factors used in this study were availability of information technology infrastructure, quality of telecommunication network and whether the available technology being compatible with expectations of the banks. In addition to these perceived risks which include fear of customers to make use of E-banking services, lack of confidence with security aspects and lack of trust of the technology of E-banking services were considered. The findings identified under technological factor revealed that, information technology infrastructure being not easily available, low quality of telecommunication network and fear of risk by customers to make use of E-banking are barriers faced in E-banking implementation.

In the case of organizational factor human and financial capital and management support were considered. Under this category the survey result identified that lack of timely information communication between employees and management and lack of participation of employees in the implementation process, lack of adequate training and absence of strong and proactive management support are the barriers in implementation of E-banking in Ethiopia.

Competitive pressure, legal framework and government support are the issues raised in this study under environmental factor. As the findings of the survey result revealed lack of government support towards E-banking implementation, absence of legal framework towards electronic commerce and lack of legal framework that enforce banking industries to adopt technological innovations are the major barriers faced by Ethiopian banks in implementing E-banking system.

The study also identified the benefits banks and customers get from adoption of E-banking system which is considered as drivers for the implementation of E-banking. These are broadly classified as direct and indirect benefits.

The direct benefits identified in this study are that E-banking implementation helps to perform banking tasks in a simple way and simplifies the activity of workers. In addition to these it helps to perform transactions at lower cost and speed and efficiency in service delivery can be attained. The survey result also revealed that E-banking services are convenient in terms of time saving and profitability and productivity of banks will also increase with E-banking implementation.

The indirect benefits include improvement in customer service, reduced number of customers visiting the branch and unlimited time of access to bank account and information.

5.2 Conclusion

E-banking system such as ATM, mobile banking internet banking and others are not well adopted by Ethiopian banking industry. This is due to information technology infrastructure being not easily available and low quality of telecommunication network. In addition to these fear of risk by customers to make use of E-banking also played a major role in delaying E-banking adoption by Ethiopian banks.

Result of the study also shows that lack of communication between employees and management and lack of participation of employees from the beginning to the end of the implementation process also hinder the E-banking implementation. In addition to these lack of adequate training to employees and absence of the banks' management support are also found to be the barriers.

Barriers of E-banking implementation are not only confined to the above factors. Lack of government support towards E-banking implementation and absence of legal frame work in E-banking also hinder full implementation of E-banking.

On the other hand, the study reveals that the benefits of technological innovations like E-banking are well known by the banks and represent a formidable force to drive implementation of E-banking system.

The benefits which are classified as direct and indirect in this study include simplified activity for bankers, low cost in performing transactions, high speed and efficiency in service delivery, increased productivity and profitability of banks, improvement in customer service, reduced number of customers visiting the branch and unlimited time of access to bank account.

All in all the findings of this study offer additional insights to the current E-banking implementation situation and its implication for the growth of E-banking in Ethiopia. In addition to this understanding the barriers of E-banking implementation might help to identify the best course of action to be taken by the government, the banks and other stakeholders to promote its development. It will also be valuable to the banking industry of Ethiopia to increase the level of awareness and understanding the benefits.

5.3 Recommendation

E-banking is a recent financial evolution in Ethiopia which has been adopted by most of the banks in Ethiopia which will have a great impact on the overall economy in general and on the banking industry in particular. Therefore a lot of effort is needed to be exerted in order to exhaustively make use of the benefits coming out of E-banking implementation. Based on the above conclusion the following points are recommended.

- In order to successfully implement E-banking system in Ethiopian banks government support is needed in providing technology infrastructure for ICT development and setting the necessary legal framework.

- In order to implement E-banking in Ethiopian banks, the banks should take the lion's share in exerting as much effort as possible to modernize their services using E-banking by mobilizing all their resources and participate their staffs from the beginning up to the end of the implementation process.

- In order to be on the right track of the fast changing technological innovations like E-banking, banks should give continuous and timely training for their employees. And update themselves to the latest technology.

- Management of the banks should own the issue of modernizing their services through E-banking and give continuous, strong and proactive support.

- In order to avoid fear of risk by customers and grab all the benefits coming out of E-banking usage, banks should work on giving awareness to customers on how to make use of E-banking products and the benefits that will come out of it.

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Annex 1

Table 2.1 E-banking services provided by Ethiopian banks

1	Abay Bank	ATM and POS coming soon
2	Addis International Bank	ATM and POS
3	Awash International Bank	ATM and POS
4	Bank of Abyssinia	ATM and Mobile Banking
5	Berhan International Bank	ATM and Mobile Banking
6	Bunna International Bank	ATM and Internet Banking coming soon
7	Commercial Bank of Ethiopia	Internet Banking, Mobile Banking, ATM, POS and Visa Card
8	Cooperative Bank of Oromia	Mobile Banking coming soon
9	Dashen Bank	Mobile Banking, Internet Banking, ATM, POS and Visa Card
10	Debub Global Bank	Internet Banking and ATM coming soon
11	Enat Bank	Internet Banking and ATM coming soon
12	Lion International Bank	ATM and POS coming soon
13	Nib International Bank	Mobile Banking, ATM and POS
14	Oromia International Bank	Internet and Mobile Banking coming soon
15	United Bank S.C.	Telephone Banking, Internet Banking, Mobile Banking, ATM and POS
16	Wegagen Bank	Internet and, Mobile Banking, ATM and POS
17	Zemen Bank	Internet and Mobile Banking, ATM

Annex 2

Table 2.2 Studies done based on TOE framework

IT Adoption	Analyzed Variables	Author(s)
EDI	**Technological context** - Perceived direct benefits, perceived indirect benefits. **Organizational context** – perceived financial cost, perceived technical competence. **Environmental context** – perceived industry pressure, perceived government pressure.	(Kuan and Chau 2001)
Open Systems	**Technology innovation** – perceived benefits, perceived barriers, perceived importance of compliance to standards, interoperability and interconnectivity. **Organizational technology** – complexity of IT infrastructure, satisfaction with existing systems, formalization of system development and management. **External environment** – market uncertainty.	(Chau and Tam 1997)
Web Site	**Technological context** – technology readiness, technology integration, security applications. **Organizational context** – perceived benefits of electronic correspondence, IT training programs, access to the IT system of the firm, internal and e-mail norms. **Environmental context** – web site competitive pressure.	(Oliveria and Martins 2008)
E-commerce development	**Technological** – support form technology, human capital, potential	(Liu 2008)

	support from technology. **Organizational** – management level for information, firm size. **Environmental** – user satisfaction, e-commerce security.	
ERP	**Technological context** – IT infrastructure, technology readiness. **Organizational context** – size, perceived barriers. **Environmental context** – production and operations improvement, enhancement of products and services, competitive pressure, regulatory policy.	(Pan and Jang 2008)
E-business	**Technology competence** – IT infrastructure, e-business know how. **Organizational context** – firm scope, firm size. **Environmental context** – consumer readiness, competitive pressure, lack of trading partner readiness.	(Zhu et al. 2003)
E-Business usage	**Technological context** – technology competence. **Organizational context** – size, international scope, financial commitment. **Environmental context** – competitive pressure, regulatory support.	(Zhu and Kraemer 2005)

Source: Tornatzky and Fleischer, 1990

Annex 3

Table 4: Questionnaires Collected

No	Name of the Bank	No of E-banking Staffs	Questionnaires Distributed	Questionnaires Collected
1	Abay Bank	4	4	2
2	Addis International Bank	4	4	4
3	Awash International Bank	12	12	10
4	Bank of Abyssinia	11	11	8
5	Berhan International Bank	3	3	2
6	Bunna International Bank	3	3	3
7	Commercial Bank of Ethiopia	30	30	25
8	Cooperative Bank of Oromia	3	3	2
9	Dashen Bank	16	16	12
10	Debub Global Bank	4	4	2
11	Enat Bank	4	4	3
12	Lion International Bank	5	5	3
13	Nib International Bank	10	10	7
14	Oromia International Bank	5	5	3
15	United Bank S.C.	3	3	2
16	Wegagen Bank	10	10	7
17	Zemen Bank	23	23	19

Addis Ababa University

College of Business and Economics

Executive MBA Program

Questionnaire

Dear Respondents;

The purpose of this questionnaire is to carry out a research for the partial fulfillment of Masters Degree in EMBA. With the topic of "Barriers and Drivers of E-banking Implementation in Ethiopia" the researcher would like to study the factors that affect implementation of E-banking and try to reveal the drivers and barriers. Hence for this study to come true, I kindly ask your assistance in responding to the questions listed below. Writing your name is not necessary and any information you present will be kept confidential and will be used only for academic purpose. I thank you in advance for your kind cooperation.

Section I: General Information

Please indicate your responses by circling your choice

1. Gender: 1) Male 2) Female

2. Age: 1)20-30 2) 31-40 4) 41-50 5) 51 or above

3. Education Level: 1) Diploma 2) First Degree 3) Second Degree
   4) Other please specify _____

4. Employer: 1) State owned bank 2) Private bank

5. Monthly income in ETB 1) Below 5000 2) 5001-8000 3) 8001-11000
   4) Above 11000

Section II: Questions related with barriers while implementing E-banking system and the perceived benefits and risks.

Below are lists of statements pertaining to Implementation of E-banking? Please indicate whether you agree or disagree with each statement by circling your choice from the options that range from strongly agree to strongly disagree.

1 Strongly Disagree **2**-Disagree **3**- Neutral **4**- Agree **5**- Strongly Agree

Part I : The following are some of the barriers the company faced when implementing E-banking system

	A. Technological factors	SD 1	D 2	N 3	A 4	SA 5
1.	The necessary information technology infrastructure for implementation of E-banking is not easily available	1	2	3	4	5
2.	Quality of telecommunication network is not good enough to perform transactions	1	2	3	4	5
3.	The technology available is not compatible with expectations and requirement of the bank	1	2	3	4	5
	B. Organizational Factors					
4.	Lack of timely information communication between employees and management and participation of employees in the implementation process.	1	2	3	4	5
5.	Lack of adequate training for staffs when introducing new technological services.	1	2	3	4	5
6.	Absence of strong and proactive top management support	1	2	3	4	5
7.	Lack of skill to implement E-banking system	1	2	3	4	5
8.	Lack of adequate financial resource for E-banking implementation	1	2	3	4	5
	C. Environmental factors					
9.	Lack of competition among local banks	1	2	3	4	5
10.	Lack of government support towards E-banking implementation (through creating favorable environment and providing inputs for banking institutions)	1	2	3	4	5
11.	Absence of legal frameworks in the country towards electronic commerce.	1	2	3	4	5
12.	Lack of legal frame work that enforce banking industries to adopt technological innovation	1	2	3	4	5

Part 2 : Questions related with perceived benefits and risks of implementing E-banking system.

	D. Perceived Benefits The following are some of the perceived benefits the company derived from implementation of E-banking system, please indicate your choice.	SD	D	N	A	SA
1.	E-banking system helps to perform banking tasks in a simple way	1	2	3	4	5
2.	Simplifies the activity of workers	1	2	3	4	5
3.	Helps to perform transactions at lower cost	1	2	3	4	5
4.	Improvement in customer service is achieved	1	2	3	4	5
5.	Speed and efficiency in service delivery is attained	1	2	3	4	5
6.	The number of customers visiting the branch has reduced	1	2	3	4	5
7.	Productivity and profitability of the bank has increased	1	2	3	4	5
8.	E-banking services are convenient in terms of time saving	1	2	3	4	5
	E. Perceived Risks The following are some of the perceived risks the company faces in implementation of E-banking system, please indicate your choice.					
9.	Customers fear risk to make use of E-banking services	1	2	3	4	5
10.	Lack of confidence with the security aspects considered as barrier for implementation of E-banking system	1	2	3	4	5
11.	Customers do not trust the technology of E-banking services	1	2	3	4	5